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On Two Genera of Trap-door Spiders from California

By Ralph V. Chamberlin

While trap-door spiders have long excited general interest, as a group they are very imperfectly known. This is due largely to the fact that their subterranean habits enable them to escape ordinary observation and to have, as a consequence, relatively poor representation in collections, both as to species and as to number of individuals. It is also unfortunate that in many cases only the females are known, while it is the secondary characters of the male that are most readily used in discriminating species and often genera.

In the present paper is given an account of two genera of these spiders. The first of these, *Calisoga*, is a clearly distinct and especially interesting new genus based upon an adult male and a not fully grown female sent me for identification by Prof. W. J. Baerg of Arkansas who had received them from a correspondent in Sacramento, California. The second genus, *Actinoxia* Simon, is tentatively revived for the North American species *Aptostichus zebrus* of Chamberlin and Ivie, *Eutychides arizonicus* of Gertsch and Wallace, and *Actinoxia versicolor* Simon, the genotype, in recent years commonly placed in *Eutychides*. The following key will aid in placing these genera with reference to the other known North American genera of Ctenizinæ.

Key to North American Genera of Ctenizinæ

A. None of the tarsi scopulate, being strongly setose and commonly also spinose.

B. Abdomen rather hard, canaliculate, truncate at caudal end . . . . . *Cyclocosmia* Ausserer

BB. Abdomen ovate, soft.

C. Tibia of third pair of legs with a deep depression or groove at base above . . . . . *Pachylomerus* Ausserer

CC. Tibia of third paid of legs normal . *Bothriocyrtum* Simon

AA. At least the anterior tarsi scopulate, not bearing spines.

B. Posterior sigilla of sternum very large, nearer to each other than to margins of sternum or nearly equidistant between each other and margins in some cases.

C. Cheliceræ bearing within at apex an obtuse, toothed process . . . . . *Myrmekiaphila* Atkinson

CC. Cheliceræ not thus produced, simply rounded at apex.

D. Posterior sigilla of sternum very elongate, converging forward and anteriorly close to each other; labium bearing spinules; tibia I of male with a spur, metatarsus I without process . . . *Eutychides* Simon

DD. Posterior sigilla of more moderate size, widely separated from each other; labium unarmed in the male; tibia I of male without true spur, but with patch of spines; metatarsus I of male with ectal process . . . . . *Actinoxia* Simon

BB. Posterior sigilla of sternum very small, much nearer to the margin than to each other.

C. Last article of upper spinnerets clearly longer and more slender than the median article . *Calisoga,* new genus

CC. Last article of upper spinnerets shorter than the median.

D. Labium without spinules; anterior tarsi and metatarsi subsequal in length . . *Amblyocarenum* Simon

DD. Labium armed with a number of teeth or spinules; anterior metatarsi decidedly longer than the tarsi . . . . . *Aptostichus* Simon

CALISOGA Chamberlin, new genus

Cephalothorax broad, but little (cir. 1/9 in genotype) longer than wide; head region broad; thoracic fovea deeply impressed, typically procurved. Ocular area scarcely twice as wide as long, the sides nearly parallel. Anterior row of eyes conspicuously procurved, its eyes nearly equidistant, the medians smaller than the laterals. Posterior row of eyes a little recurved, the medians much smaller than the laterals, widely separated from each other, the two on each side subcontiguous. Lateral eyes on each side less than a radius apart, the posterior smaller than the anterior.

Cheliceræ apically rounded, bearing a rastellum of numerous, non-seriate teeth. Labium much wider than long, bearing a few teeth in a median patch, these non-seriate. Each endite at base with a patch of numerous teeth.

Sternal inpressions small, sub-marginal.

Anterior metatarsi longer than the tarsi. The four anterior tarsi and metatarsi densely scopulate to base. Tarsi unarmed. Metatarsi I in genotype with two distal spines and one sub-basal spine beneath and a stout spine on anterior face. Metatarsi II beneath with three spines at distal end, a submedian pair and a subbasal pair, and on anterior face with two spines, one of which is sub-dorsal in position. Tibia with numerous spines. Claws bearing teeth in two series. The

palpal claw of the female bears three small teeth toward the base. The distal article of the upper spinnerets decidedly longer and more slender than the median article.

In the male the metatarsi are unmodified but tibia I bears beneath at the distal end a single spinigerous spur.

Genotype.—*Calisoga sacra*, new species.

As indicated in the key to genera above, *Calisoga* falls nearest *Amblyocarenum* and *Aptostichus* of Simon, but is readily distinguished from both by the long last article of the upper spinnerets. It is like *Amblyocarenum* in having the teeth on the tarsal claws biseriate, although the teeth in *Amblyocarnum* are fewer in number and may be distinctly biseriate only on the anterior legs. This genus is set apart, however, in having its metatarsi and tarsi approximately of the same length, and in lacking spinules on the labium. In *Aptostichus* the teeth of the tarsal claws are in a single sinuous series, etc.

Calisoga sacra, new species.

Pl. I, ff. 1-5; pl. 2, f. 1.

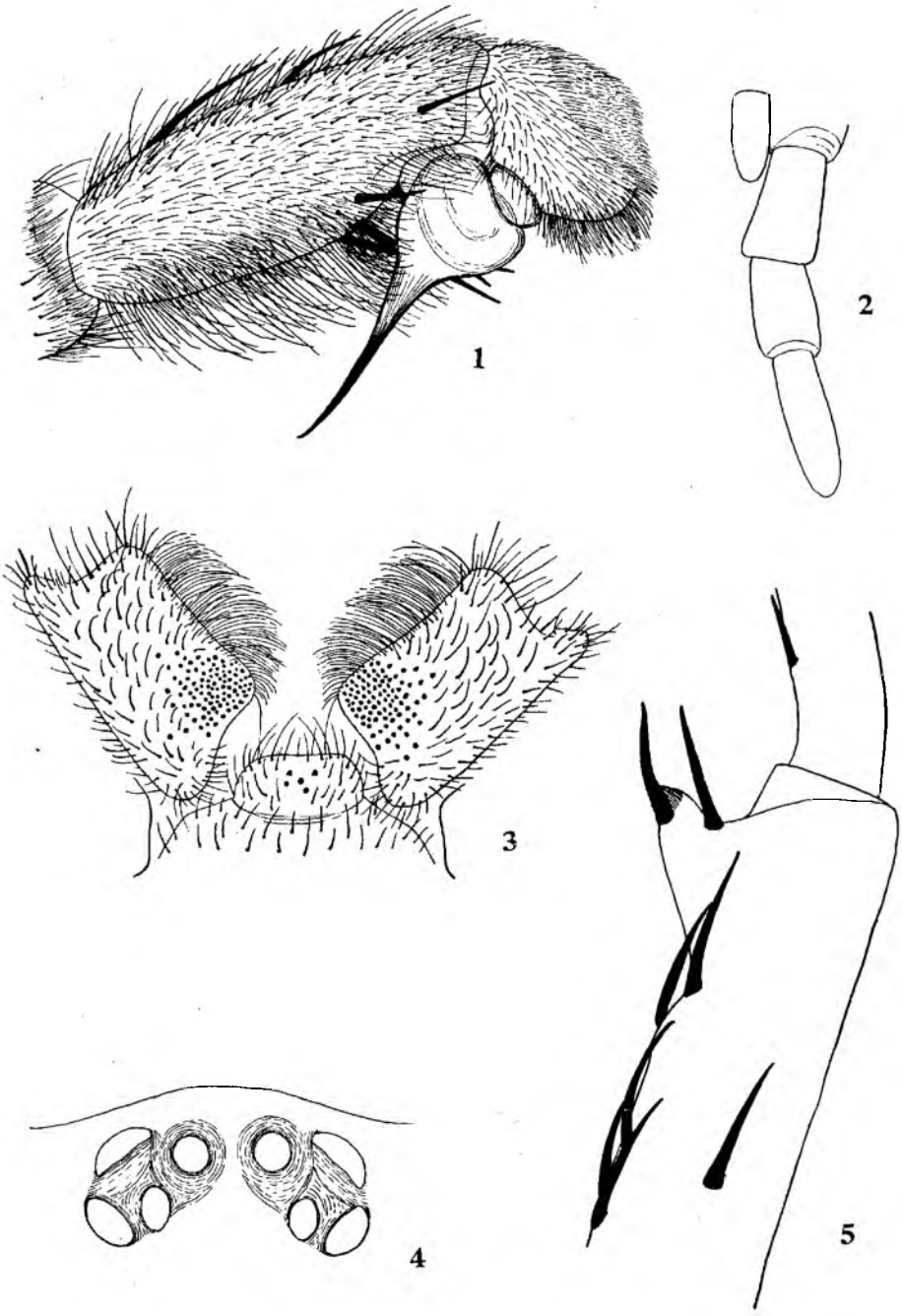
Carapace and sternum chestnut, the former the darker. Legs brown, the coxæ beneath more yellowish. Abdomen brownish yellow, somewhat paler beneath; the adult male holotype shows no definite markings, but the immature paratype has a paler median stripe above which extends from base nearly to caudal end, the stripe pointed caudally.

Eyes as shown in the figure. Cervical groove deep, procurved. Rastellum well developed along inner service of chelicra toward distal end. Denticles at base of endites in a subtriangular patch and numerous; those at distal end of labium few; in a small median area (see figure). Posterior sternal impressions small, though larger than the anterior, elliptical in outline, each removed from the lateral margin by about its length. Armature of legs as described under the genus, and the spur of tibia in male as figured. Spinnerets also figured.

Measurements:	Male
Length	18 mm.
Cephalothorax:	
Length	9
Width	7.9
Tibia—patella:	
I	10
IV	10.2

Locality.—California: Sacramento. One adult male (holotype) and one immature specimen.

Plate 1



Calisoga sacra, n. sp.

1. Right palpus of male, caudal aspect.
2. Left spinnerets in outline.
3. Endites and labium.
4. Eyes, dorsal view.
5. Portion of tibia and tarsus of leg I of male, caudal aspect, with hairs omitted.

ACTINOXIA Simon

Act. Soc. Linn. Bordeaux, 44, 1891, p. 320.

Cephalothorax a little longer than broad (cir. 6:5 in *zebrus*); fovea deeply impressed, procurved; coarsely setose. Ocular area more than twice as wide as long (almost 5:2 in *zebrus*), narrower in front than behind. Anterior row of eyes procurved, its medians nearer to each other than to the laterals, than which they are much smaller. Posterior row of eyes recurved; the medians smaller than the laterals, widely separated from each other, each being subcontiguous with the lateral of the corresponding side. Lateral eyes on each side separated by nearly the diameter of a posterior one, which is a little smaller than the anterior.

Cheliceræ apically rounded, bearing a rastellum of numerous rather stout and non-seriate teeth. Labium wider than long, bearing no teeth in the males so far as known. Endites bearing on ventral surface a patch of numerous bacillar or somewhat clavate teeth which may extend over most of length *(zebrus)* or be restricted to basal portion *(arizonicus)*, these teeth small, slender.

Sternal impressions moderately large, those of the posterior pair typically about equidistant from each other and the lateral margins, behind the middle, and forming with the preceding pair a procurved row.

Anterior metatarsi longer than the tarsi. The four anterior tarsi densely scopulate; metatarsus I also scopulate to base and metatarsus II at least over distal portion. Metatarsus I with 4 or 3 ventral spines at distal end and with or without a smaller submedian ventral spinee at base of ectal process (male); also with two spines in line on anterodorsal line. Metatarsus II also with 4 or 3 ventral spines at distal end and with 2 to many, more or less paired, ventral spines along length proximad of these distal ones; also four spines in series along anterodorsal line *(zebrus)*. Tibia I and II with numerous spines including a series along anterodorsal line. Femur IV with a transverse band of short spines across anterior portion of distal end; patella IV not spined in front, while patella III is spined in front. Claws with teeth in a single sinuous series, the basal tooth being on the anterior side, basal teeth much longer than others, typically the second and third teeth from base of pair largest; claws with six to nine teeth.

The distal article of the upper spinnerets shorter and also more slender than the median, acuminate.

In the male metatarsus I is somewhat bent at middle and bears a process or tubercle on outer side near middle. Tibia I bearing a conspicuous patch of spines and spiniform setæ at distal end on outer side.

Genotype.—*Actinoxia versicolor* (Simon).

Simon based *A. versicolor* upon a specimen which he subsequently recognized as being very young. (Hist. Nat. Araignees, vol. 2, p. 900.) He at that time withdrew *Actinoxia* into *Aptostichus*. Mr. C. P. Smith in 1908 (Ann. Ent. Soc. America, vol. 1, p. 215) showed that *versicolor* was closer to *Eutychides*, although he recognized differences.

The type of *Eutychides* is *E. aurantiacus* Simon, based on a female from Mexico. The sternal sigilla of this species, as figured by Simon and also by Cambridge, are, in the great length of the posterior pair, quite distinct from those of the species here placed in *Actinoxia*. *E. aurantiacus* also differs, as indicated in the key to genera given above, in bearing spines irregularly arranged on the labium, these being wholly absent in males of *Actinoxia*. Simon says in his diagnosis of *Eutychides* (Hist. Nat. Araignees, I, p. 109) that the anterior paired tarsal claws bear numerous (10-12) teeth while the posterior bear only 3 or 4 teeth toward base. In *Actinoxia* there is no such difference in number of teeth, which is typically 6 to 9, and the same on anterior claw (proclaw) as on the posterior (retroclaw). The sternum of *Eutychides*, as given by Simon in comparing it with *Eucteniza* (Hist. Nat. Araign., II, p. 809) is not longer than wide while it is distinctly longer in *Actinoxia*. The secondary characters of leg I in the male as given by Simon, and based by him on *E. guadalupensis*, are different, no modification of metatarsus I being mentioned, while there is a definite spur at distal end of tibia I which is absent in *Actinoxia*, being replaced by a patch of spines.

Concerning the habits of *A. versicolor*, Chas. P. Smith (1908, p. 217) writes as follows:

"The burrow of this species is long and narrow, with usually one of two types of a lateral branch, and a thin "wafer" trap-door at the surface. In adobe soil, or compact sand, the branch is generally below the upper third of the burrow and is a very neat lateral chamber, about three centimeters long (with adult spiders), 10 to 12 mm. diameter within, with a circular sharp-edged opening (5 to 8 mm. diameter) into the main tube, which is enlarged at this place. In soft loamy soil in wooded canons and along streams, the branch is usually near the surface, is of definite size and shape, and joins the main tube by a larger, less regular opening, the whole branch having the appearance of being the old abandoned upper end of the nest. Such it may be, but it evidently serves the purpose of the lateral chamber, for in no case have I found below the neater, more horizontal chamber. In only one case have I found the spider in the chamber. It is not closed by a trap door. The burrow is well lined thruout with an opaque-white sheet of silk, a whiteness which I have learned to recognize as belonging to this species, in comparison with the other trapdoor

species found here. On wooded hillsides and along thicketed banks, where the species is apt to be most abundant, and where much dead grass, fallen leaves and other vegetable debris occurs, the silken tube is frequently extended up thru the loose mass for from one to eight centimeters, supported and decorated on the outside by whatever may be near, weed stems, dead grass, loose soil, moss, leaves, etc., but always the entrance closed by the trapdoor, except for which a few could be easily mistaken for "turrets" of Atypoides. In these above-ground extensions the rim is usually a little inflated, funnel-like, the door resting more-or-less loosely upon the rim. In such cases the door is commonly a small leaf, or leaf-portion, with just enough silk to hinge it is position and form a lace-work on the under side, on which the spider can fasten its claws. In open situations, the trap is generally level with the soil surface, in leval or somewhat slanting spots, and is composed of silk below with a complete layer of soil above, more-or less decorated with moss or leaf-bits, always assimilating its surroundings. One of the largest burrows examined was 27 cm. deep, 14 to 18 mm. diameter, with trapdoor 14x12 mm.; lateral chamber only 6 cm. down, with 7 mm. opening and 13 mm. greatest diameter. Another was 28 cm. deep, 15 to 18 mm. diameter; trapdoor 25x16 mm. (unusually large); lateral chamber 18 cm. down with 9 mm. opening and 3.5 cm. long. The one male found was in a typical burrow, with typical trapdoor, lateral chamber, and silk lining."

Actinoxia versicolor Simon

Actinoxia versicolor Simon, Act. Soc. Linn. Bordeaux, 14, 1891, p. 318.

Eutychides versicolor Smith, Ann. Ent. Soc. America, 1, 1898, p. 214.

Locality.—California: Santa Clara Valley, Sonora Co., Sierra Co.

Actinoxia zebrus (Chamberlin and Ivie).

(Pl. I, ff. 1-5.)

Aptostichus zebrus Chamberlin and Ivie, Bull. Univ. of Utah, Biol. Series. Vol. 2, No. 8, 1935, p. 3, pl. I, ff. 3-5.

Type locality.—California: Palo Alto. Male holotype.

Other locality.—California: near Santa Rosa.

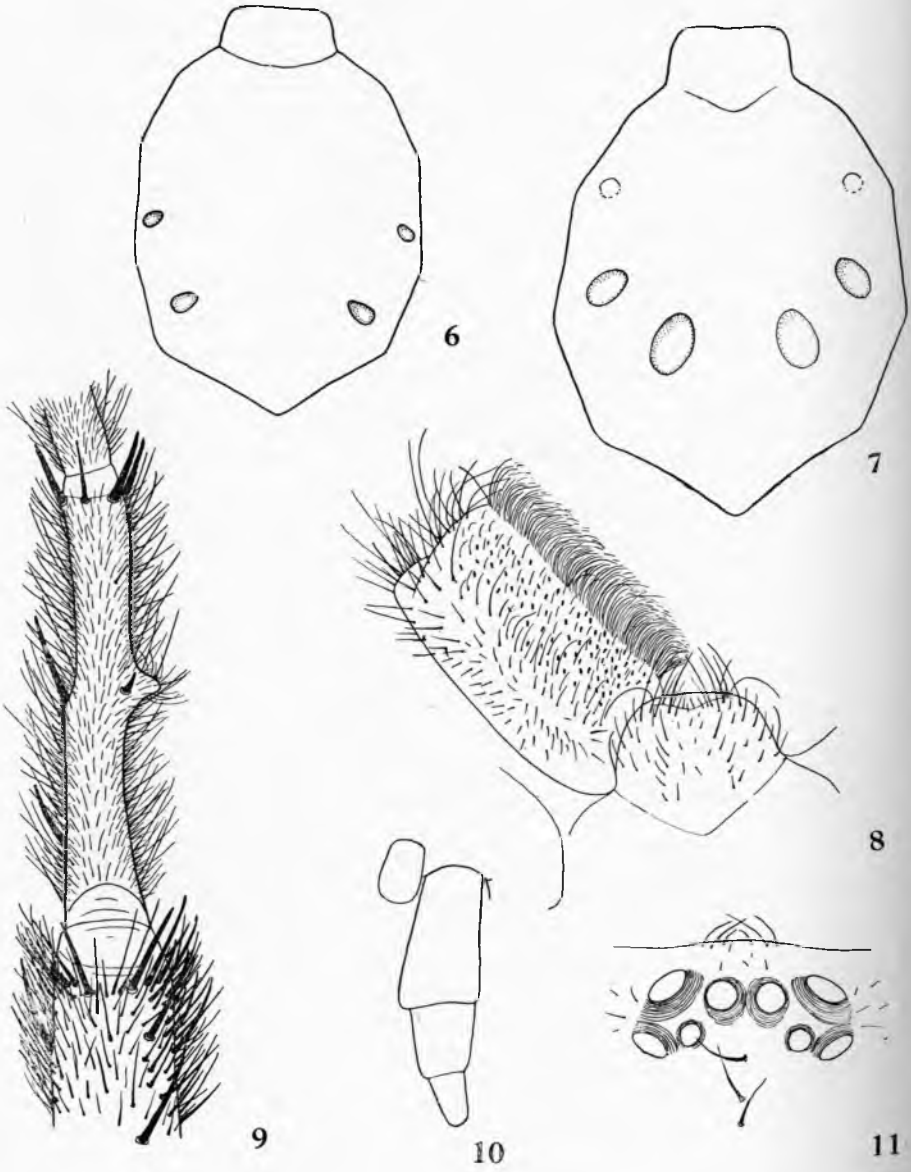
Close to and possibly identical with *versicolor*.

Actinoxia arizonicus (Gertsch and Wallace)

Eutychides arizonicus Gertsch and Wallace, American Museum Novitates, 1936, No. 884, p. 20, ff. 26-31.

Locality.—Arizona: Santa Catalina Mts., Sabino Basin. Male type.

Plate 2



6. *Calisoga sacra,* n. sp. Sternum in outline.
7. *Actinoxia zebrus* (Chamberlin and Ivie) Sternum in outline.
8. Labium and the right endite from below.
9. Metatarsus I and distal end of tibia I of left front leg of male, ventral view.
10. Spinnerets of left side in outline.
11. Eyes from above.

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